DISCOVER

BIOLOGICAL SCIENCES

UNDERGRADUATE STUDIES
THE SCIENCE OF LIFE

BIOLoGY

IF YOU ARE INTERESTED IN ANY FACET OF BIOLOGY, THIS IS THE PLACE FOR YOU!

The Department of Biological Sciences delivers an amazing breadth of courses in biology and provides unique and unparalleled research and lab opportunities.
DIVERSE

**WITH MORE THAN 120 UNDERGRADUATE COURSES** spanning a variety of subjects and topics, we are the largest and one of the most diverse departments on campus.

Students can choose from a range of topics including the environment, conservation and wildlife biology, biodiversity – plants, animals, micro-organisms and ecosystems, genetics, health studies, paleontology, physiology, cellular structures, past life forms, and evolution.

Our programs are flexible. If one course ignites a passion for a student, there is opportunity to explore and learn more from world-renowned faculty.

PRACTICAL

**INTERACTIVE AND HANDS-ON EXPERIENCE IS OUR PRIORITY.** More than half of our courses have a laboratory component, offering highly specialized training. Our labs are small (capped at 20 students), and we offer small group learning in seminars as well as field experiences both on- and off campus.

COMMUNITY

**AWARD-WINNING** faculty members, lab coordinators, staff, and graduate students promote a supportive community for exploring interests, getting hands-on experience, and working to achieve academic and career goals.

Most areas in biology have a corresponding undergraduate student association, allowing for more opportunities to interact with students who share common interests.

DID YOU KNOW?

**THE DEPARTMENT OF BIOLOGICAL SCIENCES** has several greenhouses including a collection of zonobiomes. A zonobiome greenhouse shows students the effect that climate and geography has on plants. These greenhouses contain representative samples of plants from the eight major plant zones of the world growing in a natural setting. Students see a much broader ecological perspective than could be achieved otherwise.
OUR PROGRAMS

HONORS OR SPECIALIZATION DEGREES

Canada Research Chair in Evolutionary Developmental Biology Sally Leys has discovered that freshwater sponges, not previously thought to possess any type of sensory organ, actually sneeze in response to physical stimuli such as sediment in the water. Photo taken from LEYS LAB
OUR PROGRAMS

We offer **BACHELOR OF SCIENCE SPECIALIZATION AND HONORS DEGREES** in the disciplines below. Students can also select a Biological Sciences major or minor, as well as a Bioinformatics minor within the Bachelor of Science General degree.

**ANIMAL BIOLOGY**
Study general questions about form, function, development, and interactions of vertebrate and invertebrate animals, along with a comprehensive overview of how different areas of biology relate to one another.

**ECOLOGY**
Study interactions of organisms with other organisms as well as with abiotic factors in the environment.

**EVOLUTIONARY BIOLOGY**
Investigate the diversity of organisms, including their evolutionary relationships, adaptations and genetic variations, the ways in which species originate and become extinct, and the mechanisms involved in evolutionary change.

**IMMUNOLOGY & INFECTION**
Study the physiological system that prevents or limits attack by infectious organisms. This program explores the host immune response and the biology of pathogens, including how one shapes the evolution of the other.

**MICROBIOLOGY**
Explore micro-organisms, particularly bacteria, including their function, physiology, and importance to life.

**MOLECULAR GENETICS**
This program looks at heredity and variation in biological systems at the level of molecules that transmit and express genetic information.

**PHYSIOLOGY & DEVELOPMENTAL BIOLOGY**
Study the processes that occur within all living organisms including the interactions between cells, tissues, and organs.

**PLANT BIOLOGY**
This program covers one-celled photosynthetic organisms through to flowering plants, with emphasis on the development, physiology, and biochemistry of plants.

SEE [ADMISSIONS.UALBERTA.CA](http://admissions.ualberta.ca) FOR ADMISSION REQUIREMENTS
ADDITIONAL OFFERINGS
COLLABORATIVE AND ADDITIONAL OFFERINGS

MARINE SCIENCE
Marine science spans oceanography, fisheries biology, management, and marine conservation. Although the University of Alberta does not offer a formal marine science degree, we do offer courses with a strong marine emphasis.

Other marine science courses can be taken at the Bamfield Marine Sciences Centre on Vancouver Island for credit toward degrees at the University of Alberta.

BAMFIELDMSC.COM

PALEONTOLOGY
Administered jointly with the Department of Earth and Atmospheric Sciences, students receive broad education in the evolutionary history of life by taking both biological and geological subjects such as paleobiology, evolutionary biology, systematics, functional morphology, sedimentology, stratigraphy, and plate tectonics.

SOUTHERN AFRICAN FIELD SCHOOL
THE SOUTHERN AFRICAN FIELD SCHOOL (SAFS) is a University of Alberta study abroad opportunity that provides world-class field education in Swaziland, South Africa, and Mozambique.

SAFS offers life-changing educational experiences for undergraduate students interested in African ecology, marine ecology and directed research. Students connect with the local communities, develop international networks, and learn to develop poignant research questions.

SCIENCE.UALBERTA.CA/AFRICA
Andrew Derocher, Biological Sciences Professor. (His current research is focused on understanding the effects of climate change on polar bears)
RESEARCH OPPORTUNITIES

RESEARCH CERTIFICATE IN SCIENCE (BIOLOGICAL SCIENCES)

THE FIRST OF ITS KIND IN CANADA, this unparalleled opportunity allows undergraduate students to engage in authentic research inspired by the exciting advances in our department.

The certificate is woven into a student’s degree program through four research projects and two technical skills and data analysis courses. Participants obtain specialized research skills and practical lab and/or field expertise, as well as increase problem solving and communication skills.

This certificate is perfect for students curious about scientific research and interested in understanding what a career in science is all about.

OTHER WAYS TO GET INVOLVED WITH RESEARCH

We offer second, third, and fourth year research courses to any University of Alberta student interested in participating in projects and conducting their own research.

Students interested in research can also access summer opportunities through NSERC UNDERGRADUATE AWARDS or launch their own research through the Undergraduate Research Initiative, URI.

FACILITIES

The size and breadth of research interests has allowed the DEPARTMENT OF BIOLOGICAL SCIENCES to build facilities and museums that would be difficult to maintain by a smaller unit.

Nine museum collections housing millions of unique and irreplaceable specimens, spanning many branches of the tree of life
Advanced microscopy unit with 8 scopes
Extensive aquatic facility for freshwater and marine organisms
Biosciences Geographic Information Systems (GIS) Facilities
Biogeochemical Analytical Laboratory
Drosophila Service Unit
Greenhouses and growth chambers for growing an array of plants
Low-Level Mercury Analytical Laboratory
Molecular Biology Facility, housing cutting-edge full genome sequencing machines
A FUTURE IN BIOLOGY

BAMFIELD MARINE SCIENCES CENTRE, Vancouver Island
A FUTURE IN BIOLOGY

WHERE CAN YOUR BIOLOGICAL SCIENCES DEGREE TAKE YOU?

**RECENT EXCITING DISCOVERIES** across all branches of biology touch nearly every aspect of today’s society.

Our hands-on approach and varied course content provide a format for students to gain skills valued by potential employers: communication, problem-solving, lab analysis, and industry-specific knowledge.

Career opportunities for graduates with a solid understanding of biology are numerous, highly varied, and constantly expanding. Biologists work in the laboratory, field, and classroom, and are employed by industry, government, and educational institutions. A degree in biology also opens doors to a wide range of professional programs in the health industry.

**SCIENCE INTERNSHIP PROGRAM**

**THE SCIENCE INTERNSHIP PROGRAM** integrates university studies with relevant, paid work experience while providing employers with knowledgeable and highly-motivated undergraduate students.

The program formally integrates a student’s university education with work experience at a partner employer organization. It is open to a broad demographic of undergraduate science students and facilitates the process of connecting employers and students.

uab.ca/ScienceInternship

**ADVANCED EDUCATION**

An undergraduate degree in **BIOLOGICAL SCIENCES** provides an excellent foundation for many professional programs as well as numerous opportunities for advanced education. Students continuing to our graduate programs enjoy careers in research and academia, as well as industry.